Developing Monitoring Methods for *Leptasterias* spp. As Sentinel Species in Detecting Local Environmental Changes

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**Introduction**

*Leptasterias* spp., six-rayed sea stars, are found in rocky intertidal habitats ranging from Alaska to central California. *Leptasterias* brood their young externally until the embryos grow into fully developed juveniles. These juveniles disperse by crawling away, limiting their dispersal potential. This localized dispersal provides an opportunity to use *Leptasterias* spp. as sentinel species of local environmental health across a broad geographic range.

**Objective**

We aim to develop an effective method for monitoring these small brooding sea stars along a heterogeneous coastline. We describe two methods for monitoring *Leptasterias* spp. populations that take into account the patchy distribution patterns of the species in multiple habitat types.

**Methods**

Monitoring sites were strategically chosen for assessing environmental factors including temperature and terrestrial runoff nearest to San Francisco Bay. Sites were split into two categories of habitat type: boulder/beach and tide pool.

**Results/Conclusions**

Preliminary data was collected on the spatial distribution patterns of *Leptasterias*. Random half-meter plots were used to optimize censusing in the boulder/beach habitat. Habitable space within plots was measured as the number of meters along the vertical line in the center of the plot that does not include area overgrown with gooseneck barnacles and anemones. Timed counts were found to accurately measure density in tide pool sites.

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Using power analysis, we calculated the number of plots needed to accurately detect a significant change in *Leptasterias* density in boulder/beach habitat.

**Future Directions**

- Temperature effects on brooding *Leptasterias* spp. at Muir Beach (Kathryn Nuessly)
- Phylogeography of *Leptasterias* spp. along terrestrial outlets in central California (Riley Smith)
- Citizen Science – public involvement in monitoring *Leptasterias* spp. populations.

**Acknowledgements**

Fieldhands: Sarah Miller, Alex Lufting, Catie Ayres, and REU students

Statistics and design advice: Ed Connor, Xiaohang Dai, Tom Neislon, and Michael Beck

Support: Beth Sheets and Vanessa Guerra

Works Cited


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